Yuri Gershtein

Curriculum Vitae

Place of Birth:	Moscow region, Russia
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EDUCATION

- Ph.D., Institute for Theoretical and Experimental Physics, Moscow Thesis: "A Study of $\overline{B}^0 \to D^{*-} l^+ \nu$ and $B^0 - \overline{B}^0$ Mixing using partial D^{*-} reconstruction", 1996
- B.Sc., Moscow Institute for Physics and Technology, 1992

FELLOWSHIPS

- Alikhanov's Fellowship 1998

PROFESSIONAL EXPERIENCE

2003 – present	Convener of the DØ Common Samples Group
2002 – 2003	Convener of the New Phenomena Trigger Working Group
2000 – 2003	Convener of the DØ Tau ID group
1999 – 2000	Leader of the Silicon Barrel assembly project for the DØ Upgrade
1999 - present	Research Associate at Brown University, Providence, RI
1996 - 1999	Research Scientist at Institute for Theoretical and Experimental Physics, Moscow, Russia.
1991 - 1995	Research Assistant at Institute for Theoretical and Experimental Physics, Moscow, Russia.

EXPERIMENTS

DØ (1997 - present), CMS(1994-99), HERA-B(1994), GEM (1993), ARGUS(1991-99)

PERSONAL CONTRIBUTIONS

PHYSICS ANALYSIS AND RELATED TOOLS

- Carry on a search for physics beyond the Standard Model in the diphoton plus missing transverse energy final state using data from Run 2. The primary candidate for new physics in this channel is supersymmetry with gauge-mediated breaking. Preliminary results of this analysis have been presented at Lepton Photon 2003 and it is expected to be published in early 2004.
- Co-lead the D0 Common Samples group. The group's charge is to produce standard, well understood data samples for variety of physics analyses. This includes off-line streaming of events, centralized post-processing with latest versions of object identification algorithms, associated CPU and data storage management and code development. The group also serves as a forum for discussion of common aspects of the analyses with

similar topologies in different physics groups. These include: event selection, luminosity determination, analysis tools, and MC production.

- Coordinated and significantly contributed to the efforts in triggering, reconstructing, identifying and calibrating of hadronic decay modes of tau leptons; under my leadership the Tau ID group has observed a signal of $Z \to \tau\tau$ with one of the tau leptons decaying into hadrons, which led to the first measurement of the cross-section in this mode at a hadronic collider
- Play a major role in development of DØ trigger menu, especially in connection to triggers for New Phenomena searches
- Made major contributions to the DØ reconstruction software and to muon and electron/photon identification techniques
- Invented the method of partial D^{*-} reconstruction in $\overline{B}^0 \to D^{*-} l^+ \nu$ decay. Its application to ARGUS data resulted in precise measurements of $\overline{B}^0 \to D^{*-} l^+ \nu$, $D^0 \to K^- \pi^+$ decay and $B^0 - \overline{B}^0$ mixing. This method is now widely used (B-factories, CLEO and LEP).
- Was one of the primary authors of the ARGUS papers "Measurement of the Absolute Branching Fractions for D0 decays into $K^- \pi^+$, $K^- \pi^+ \pi^+ \pi^-$ and $K_S^0 \pi^+ \pi^-$" and "Measurement of the Semileptonic Branching Fractions of the D0 meson"

DETECTOR HARDWARE

- Lead the Silicon Barrel assembly of the DØ Upgrade project. Defined mechanical quality criteria, along with the mechanical testing and certification procedures for the DØ silicon ladders. Developed and validated barrel assembly and survey methods. Wrote code for Coordinate Measuring Machine used in the assembly. Created assembly procedures, trained technicians, organized assembly and testing shifts and actively took part in them. Delivered the completed barrels to the collaboration on schedule.
- Played major role in the DØ muon trigger scintillating counter design and tests. Set up a test stand for light yield and time resolution studies and performed the measurements. Worked with engineers and technicians on the mechanical design of the counters. Participated in setting up the production line at ITEP, Moscow.
- Participated in construction and beam tests of several Quartz Fiber Cerenkov calorimeter prototypes for the CMS experiment. I was actively involved in the analysis and interpretation of the data from this very non-compensating calorimeter type, which turned out to have some unusual and interesting properties. Took assembly and data taking shifts and participated in the quartz fiber radiation damage studies.
- Participated in the beam tests and beam test data analysis of the prototypes of Cathode Strip Chambers for GEM experiment.

OPTIMIZATION OF THE DETECTOR DESIGN

- Proposed an upgrade of the DØ Level 1 tracking trigger for the Run 2 and made estimates of its performance. This upgrade is essential to preserve good performance of the muon and hadronic tau triggers in the high occupancy environment

- Proposed several new features for the tracking trigger of the DØ experiment, which allows triggering on isolated charged particles at the first hardware level of the trigger. This greatly increases the trigger efficiency for processes with isolated leptons and is widely used in DØ trigger menu
- Proposed, designed, and implemented the original algorithm for fast calculation of track isolation at the Level 2 of the DØ trigger. This algorithm allows for suppressing background by an order of magnitude without significant loss of efficiency for isolated tracks
- Formulated physics requirements on the very forward calorimeter of the CMS experiment. Determined that most critical applications of the very forward calorimeter are the measurements of missing transverse energy in the H->$\tau\tau$ decays and detection of the forward jets from vector boson fusion processes. Developed a fast Monte Carlo description of Quartz Fiber Cerenkov calorimeter based on the parameterization of the test beam data, which I then used to optimize its design (*i.e. coverage, granularity, packing fraction, etc.*) Performed an extensive simulation that played important role in the technology choice for the CMS very forward calorimeter.
- Participated in studies for the HERA-B lepton trigger optimization
- Co-authored an original proposal of the new alignment method for the GEM muon chambers.

PARTICIPATION IN PHYSICS WORKSHOPS

- Snowmass-2001: Studied Linear Collider capabilities to measure SUSY parameters. Proposed a new method of analysis for channels with τ leptons in final state
- QCD and Weak Boson Physics 1999: Studied problems related to photon identification at Tevatron.

REVIEW PANELS AND BOARDS

- Served on the Run 2b Trigger Task Force
- Served on the DØ Trigger Board.
- Served on the DØ Trigger Upgrade committee for Run 2b.
- Served on the DØ EM ID vertical review committee.
- Served on DØ Editorial Boards

WORK WITH STUDENTS

- Direct students working on Tau ID in DØ
- Provide informal supervision to two Brown University graduate students
- Mentored two graduate students at ITEP

TALKS

"Recent New Phenomena Results at DØ", FNAL Annual User's Meeting
watch it on the web at the FNAL's video archive:
http://vmsstreamer1.fnal.gov/VMS_Site_02/Lectures/Users2003/Gershtein/index.htm

"DØ Results from Run 2", Fermilab's Wine and Cheese Seminar, 2002
watch it on the web at the FNAL's video archive:
http://vmsstreamer1.fnal.gov/VMS_Site_02/Lectures/WC/Gershtein/index.htm

"Search for GMSB SUSY in Run 2 in DØ", DPF, Williamsburg VA, 2002

"Search for Higgs in Run II", FCP-01, Nashville TN, 2001

"Search for New Phenomena at Tevatron Run II", Lecture at the Lake Louise Winter Institute, Lake Louise, Alberta, 2000

"Recent ARGUS results on B-physics", Plenary talk at 5th International Symposium on Heavy Flavor Physics, Montreal, 1993